UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/540,118 | 02/10/2006 | Moustapha Hafez | 034299-651 | 8883 |

7590 04/14/2009

Robert E. Krebs
Thelen Reid & Preist
P.O. Box 640640
San Jose, CA 95164-0640

| EXAMINER | |
|---|---|
| CARLOS, ALVIN LEABRES | |
| ART UNIT | PAPER NUMBER |
| 3715 | |
| MAIL DATE | DELIVERY MODE |
| 04/14/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/540,118 | HAFEZ ET AL. | |
| | Examiner | Art Unit | |
| | ALVIN L. CARLOS | 3715 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06/20/05* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. The following is a Final Office action in response to communications received December 11, 2008. Claims 1-17 are now pending.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-9 stand rejected under 35 U.S.C. 102(e) as being anticipated by Prince 6743021.

Re claim 1, Prince discloses a device comprising a tactile interface formed by a plate having a surface capable of being modified in a controlled manner (see figure 1, column 1 lines 24-26), plate comprising an array of elements for modification of the surface (see figure 2, column 3 lines 54-60), control means of the modification elements of the surface (see figure 4, column 8 lines 1-27), characterized in that the plate is made of a shape memory material A or comprising at least one sub-plate made of shape memory material A (see figures 9A-9B, column 11 lines 14-18), and in that the array of modification elements of the surface of the plate is constituted by an array of one or more blades solid monolithically with the plate (see figures 2 and 6), by one or more arms solid monolithically with the plate (see figure 6 and 11C), recesses for releasing

blades being present on a part of a perimeter of the blade (see figure 6, column 9 lines 37-59), the blade having a first position at a first temperature and a second position at a second temperature (see figures 9-10, column 11 lines 44-59).

Re claim 2, Prince discloses a tactile interface formed by a plate made of a shape memory material characterized in that the shape memory material making up the plate is a two-way material having a first hot form and a second cold form (see figures 9-10, column 11 lines 44-59).

Re claim 3, Prince discloses a device comprising a tactile interface formed by a plate made of a shape memory material characterized in that modification elements of the surface of the plate incorporate elastic elements mechanically connected on the one hand to the plate and on the other hand to the modification element of the surface of the plate to which these elastic elements belong (see figures 9-10, column 6 lines 45-52), exerting a return force on the modification element of the surface of the plate (10) to bring it back from the second to the first form (see figures 9-10, column 11 lines 66-67 and column 12 lines 1-42).

Re claim 4, Prince discloses a device comprising a tactile interface formed by a plate made of a shape memory material characterized in that modification elements of the surface of the plate incorporate elastic elements mechanically connected on the one hand to the plate and on the other hand to the modification element of the surface of the plate to which these elastic elements belong (see figures 9-10, column 6 lines 45-52), exerting a return force on the modification element of the surface of the plate to bring it

back from the second to the first form (see figures 9-10, column 11 lines 66-67 and column 12 lines 1-42).

Re claim 5, Prince discloses a tactile interface formed by a plate made of a shape memory material characterized in that it is formed from two sub-plates solid with one another by a main common surface (see figures 10A-10B, column 11 lines 39-52).

Re claim 6, Prince discloses a device comprising a tactile interface formed by a plate made of a shape memory material characterized in that one of the sub-plates is made of a shape memory material (see figures 9A-9B, column 11 lines 14-21).

Re claim 7, Prince discloses a device comprising a tactile interface formed by a plate made of a shape memory material characterized in that the two sub-plates are made of a shape memory material (see figures 8A-8B, column 10 lines 56-61).

Re claim 8, Prince discloses a tactile interface formed by a plate made of a shape memory material characterized in that a sub-part of a modification element of the surface of the plate formed in one of the sub-plates has a recessed part present above a part of a full sub-part of the other sub-plate (see figure 6, column 9 lines 50-59).

Re claim 9, Prince discloses a tactile interface formed by a plate made of a shape memory material characterized in that a layer made of thermally insulating material is interposed between the two sub-plates made of shape memory material (see figures 6 and 8, column 6 lines 45-48 and column 9 lines 50-59).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10-12, 14, and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Prince 6743021.

Re claim 10, Prince discloses a tactile interface characterized in that the control means of the transformation of the modification elements of the tactile sensation comprising one or more laser emitters (column 12 lines 14-16), whereof the radiation from each is utilized to create the transformation of one or more modification elements of the tactile sensation, the radiation emitted by a laser emitter acting by heating arms, the deformation of arms causing a blade to pass from the first to the second position (column 12 lines 17-35). Furthermore, since Prince discloses the thin film shape memory material heated by joule heating, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any type of emitter (e.g. laser) that provide a process by which the passage of an electric current through a conductor releases heat.

Re claim 11, Prince discloses a device comprising a tactile interface characterized in that the control means of the modification elements of the tactile sensation comprising as many laser emitters as modification elements of the tactile sensation with the radiation from a laser being put in bijective correspondence with a

modification element of the tactile sensation (see figures 2, 9 and 10, column 12 lines 17-35). Furthermore, since Prince discloses the thin film shape memory material heated by joule heating, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any type of electric heating device (e.g. laser emitter) that provide a process by which the passage of an electric current through a conductor releases heat.

Re claim 12, Prince discloses a tactile interface in that the control means of the modification elements of the tactile sensation comprise a laser emitter controlling a plurality of modification elements of the tactile sensation and means for mobilizing the radiation with one or two degrees of freedom (see figures 2, 9 and 10, column 12 lines 17-35). Furthermore, since Prince discloses the thin film shape memory material heated by joule heating, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any type of electric heating device (e.g. laser emitter) that provide a process by which the passage of an electric current through a conductor releases heat.

Re claim 14, Prince discloses a tactile interface characterized in that it comprising a translation plate the laser emitter being shifted by this plate (see figures 2-3, column 5 lines 7-32).

Re claim 16, Prince discloses a tactile interface characterized in that it comprising a reflector controlled in rotation, this reflector receiving the radiation originating from a laser emitter (see figure 4, column 7 lines 42-48 and column 8 lines 1-32). Furthermore, since Prince discloses the thin film shape memory material heated by

joule heating, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any type of electric heating device (e.g. laser emitter) that provide a process by which the passage of an electric current through a conductor releases heat.

6. Claims 13, 15, and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Prince 6743021 in view of Martin 5574576.

Re claim 13, Prince discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of a fiber optic having an inlet end receiving the radiation output by the laser emitter and an outlet end for the laser radiation, with the radiation used to produce transformation of one or more modification elements of the tactile sensation originating from said outlet of the fiber optic.

However, Martin teaches a fiber optic having an inlet end receiving the radiation output by the laser emitter and an outlet end for the laser radiation, with the radiation used to produce transformation of one or more modification elements of the tactile sensation originating from said outlet of the fiber optic (column 6 lines 26-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Prince's invention in view of Martin in order to provide a tactile display device where upon contact with amplified laser light, individual elements are moved to form a pattern representing an observed visual image as taught by Martin (column 3 lines 47-50).

Re claim 15, Prince in view of Martin discloses all of the claimed subject matter as discussed above. In addition, Prince discloses a tactile interface characterized in that

it comprising a translation plate, the outlet end of the fiber optic being shifted by this plate (see figures 4 and 7, column 10 lines 28-51).

Re claim 17, Prince in view of Martin discloses all of the claimed subject matter as discussed above. In addition, Prince discloses a tactile interface characterized in that it comprising a reflector controlled in rotation, this reflector receiving the radiation originating from a laser emitter via the fiber optic (see figure 4, column 7 lines 42-48 and column 8 lines 1-32). Furthermore, since Prince discloses the thin film shape memory material heated by joule heating, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any type of electric heating device (e.g. laser emitter) that provide a process by which the passage of an electric current through a conductor releases heat. Moreover, since Prince discloses the thin film shape memory material connected by lines and cables from an electric power source controlled by the microcontroller, it would have been obvious to one of ordinary skill in the art at the time of the invention to used any type of cable lines (e.g. metallic wires, fiber optics) as a medium for transmission of signals.

***Response to Arguments***

7. Applicant's arguments filed December 11, 2008 have been fully considered but they are not persuasive.

8. In response to applicant's arguments that Prince does not disclose "an assembly of one or more blades solid monolithically with the plate by one or more arms solid monolithically with the plate, recesses for releasing blades being present on a part of a perimeter of the blade, plate made of memory shape alloy", the Examiner disagrees.

Prince discloses an exploded view of a schematic for the module structure has a plurality of microelectromechanical valves or devices (e.g. piezoelectric or shape memory alloy) (see figure 3, column 5 lines 64-67 and column 6 lines 1-25).

9. In response to applicant's arguments that Prince does not disclose "elements made of two-way shape memory alloy having a first hot form and a second cold form", the Examiner disagrees. Prince discloses an exploded view of a schematic for the module structure has a plurality of microelectromechanical valves or devices (e.g. piezoelectric or shape memory alloy) (see figure 3, column 5 lines 64-67 and column 6 lines 1-25), In addition, shape memory alloy is an alloy that "remembers" its shape, and can be returned to that shape after being deformed, by applying heat to the alloy. Therefore, Prince discloses a shape memory alloy when heat is applied (hot form) (see figures 9B-10A), and when heat is not present (cold form) (see figures 9A-10B).

10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

11. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Prince's invention and use Martin's photocircuit that utilize fiber optic and laser diode as a source of heat to produce deformation of the shape memory alloy in order to provide a refreshable tactile display device with a flexible surface.

***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALVIN L. CARLOS whose telephone number is (571)270-3077. The examiner can normally be reached on 7:30am-5:00pm EST Mon-Fri (alternate Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571)272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alvin L Carlos/
Examiner, Art Unit 3715
April 2, 2009

/Cameron Saadat/
Primary Examiner, Art Unit 3715